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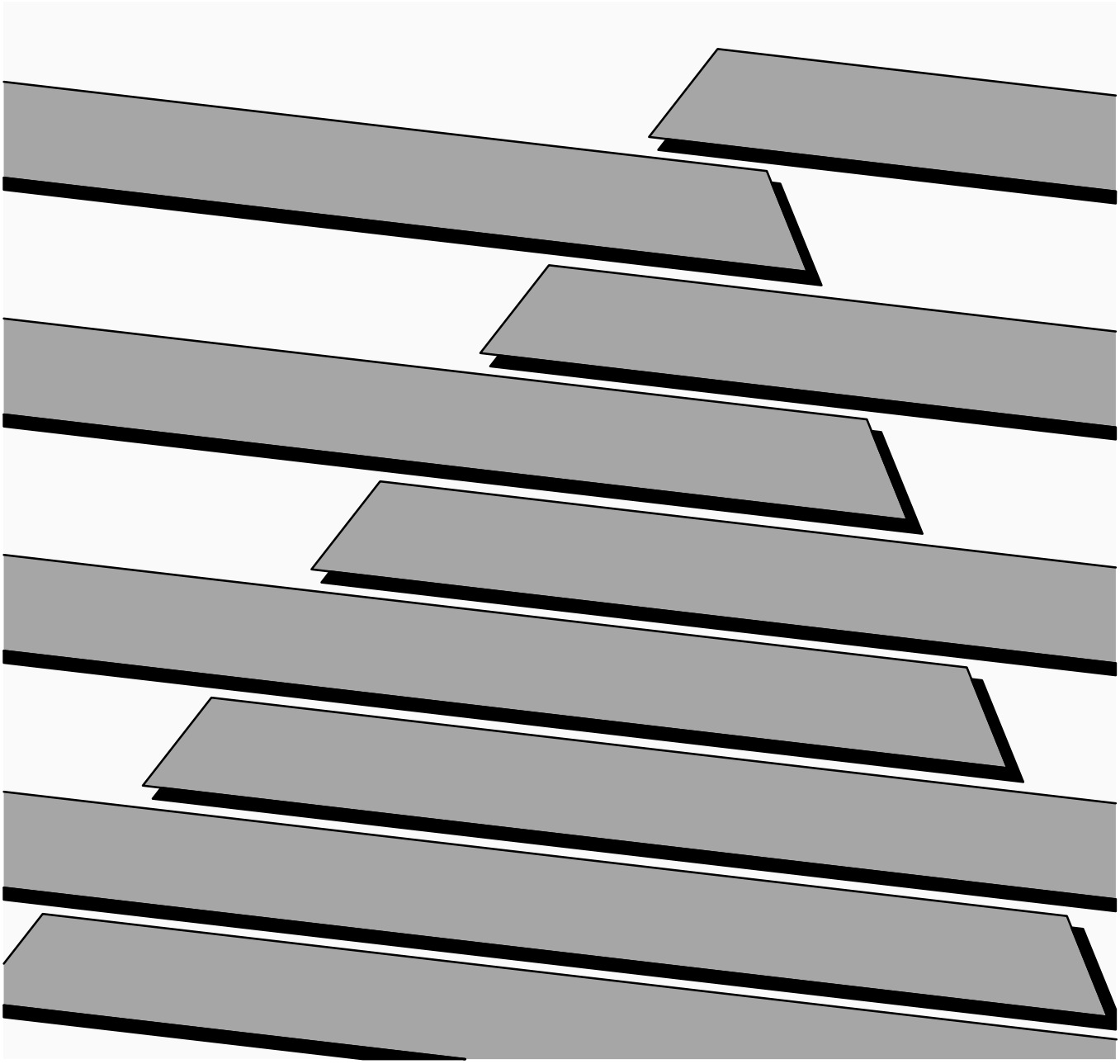
ALLEN–BRADLEY

Bulletin 2705
RediPANEL™ Plug & Go Push Button Modules

(Bulletin 800A 16 and 32 Points)

User Manual



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- avoid the hazard
- recognize the consequences

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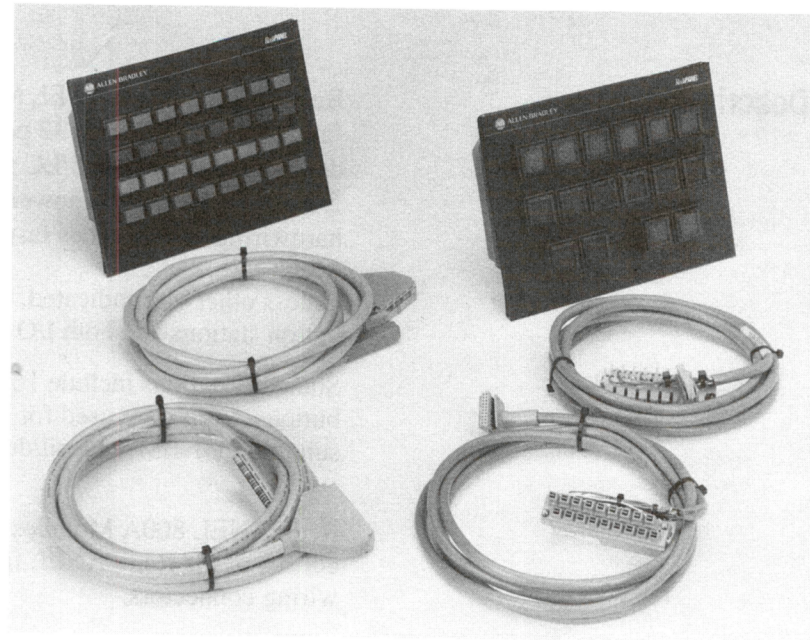
User Manual
Bulletin 2705
RediPANEL 800A Push Button Modules



93-455-6

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RediPANEL Operation	13
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Modifications and Replacement Procedures	19
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Related Publications

The table below lists other related publications you may want to reference:

Publication Title	Publication No.
Bulletin 2705 RediPANEL Push Button Modules Switch Replacement Kit	2705-2.5

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Description

Bulletin 2705 RediPANEL Modules with Bulletin 800A Push Buttons are fully assembled 16 and 32 point push button stations that operate with high density Allen-Bradley PLC and SLC I/O modules. The only wiring required is a pair of cables and power supply connections, which eliminates costly hardwiring and provides fast installation and start-up.

Unless otherwise indicated, the descriptions that follow apply to both push button stations and both I/O modules.

Standard stations include 16 or 32 normally open (N.O.) illuminated push buttons. LED's are used for illumination. The industrial 800A version is suitable for NEMA 13 oil/dust tight industrial enviornments.

RediPANEL 800A Modules can also be ordered as custom models which consist of the RediPANEL front plate and all the necessary push button wiring connectors.

These custom Push Button stations can include any of the following Allen-Bradley Bulletin 800A devices:

- Momentary illuminated or non-illuminated push buttons
- Flush or extended head operators
- Two position non-illuminated selector switches

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Features

Easy Installation

Each RediPANEL is supplied complete with preassembled push buttons and front plate. Separately ordered Bulletin 1492 wiring system cables plug directly between the I/O Modules and the RediPANEL adapter boards, eliminating hardwiring of individual devices. To install RediPANEL modules follow these easy steps:

1. Cut an opening in the panel approximately 5.9 in. (149 mm) high x 8.6 in. (218 mm) wide. See Figure 1.
2. Drill four 0.296″ (7.52mm) dia. holes for the top and bottom mounting brackets. A template is provided with the module to assist in this operation.
3. Slide the module through the opening.
4. Apply the mounting brackets and tighten all the captive knurled thumbscrews, being certain gasket is in place. Figure 1 shows screw locations.
5. Connect the appropriate cables between the RediPANEL modules and the PLC or SLC I/O modules. See page 10.
6. Connect external 24VDC power supply to pull-apart screw terminals on the RediPANEL.
7. Connect green ground screw on the RediPANEL to the earth ground.

See pages 9 and 10 for detailed instructions on connecting power and I/O cables.

Clearance Considerations

RediPANEL 800A Modules mounted inside an enclosure must have adequate space for wire clearances. See Figure 2 for minimum recommended spacing.

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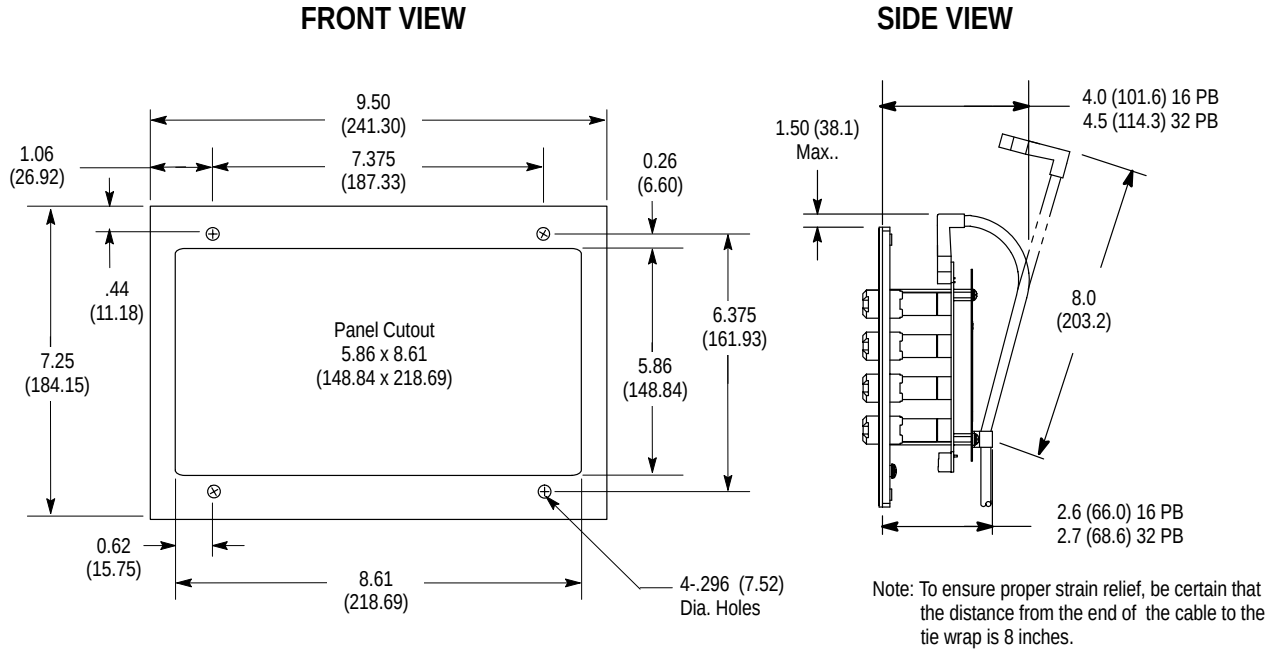
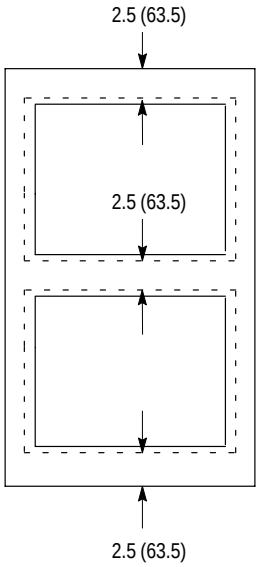
Figure 1
Mounting Dimensions of the Module in Inches (mm)



Note: To ensure proper strain relief, be certain that the distance from the end of the cable to the tie wrap is 8 inches.

Figure 2
Enclosure spacing in Inches (mm)



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Low System Cost

The RediPANEL reduces overall system cost by reducing wiring, engineering, installation, and maintenance. Connection to high density Allen-Bradley I/O modules is simple, easy, and cost effective.

Functional Requirements

Electrical Requirements and Power Supply

An external 24 VDC ± 10% power supply is used for this module. The power supply must be able to provide the current requirements for the Bulletin 800A assembly and the selected PLC or SLC input sinking and output sourcing modules.

The Bulletin 800A LED's use the power supply to draw the source current from the output module and the contacts complete the circuit for the sink current to the input modules. See Table 1 below for current requirements.

Table 1
RediPANEL Current Requirements

No. of Pushbuttons	PC type	Item	Current Required
16	SLC	Bulletin 800A LED's from 1746-OB16 Output module	.35 Amps
		Bulletin 800A contacts to 1746-IB16 Input module	.12 Amps
		Total maximum current required	.47 Amps
	PLC	Bulletin 800A LED's from 1771-OBD Output module	.35 Amps
		Bulletin 800A contacts to 1771-IBD Input module	.20 Amps
		Total maximum current required	.55 Amps
32	SLC	Bulletin 800A LED's from 1746-OB32 Output module	.71 Amps
		Bulletin 800A contacts to 1746-IB32 Input modules	.24 Amps
		Total maximum current required	.95 Amps
	PLC	Bulletin 800A LED's from 1771-OBN Output module	.71 Amps
		Bulletin 800A contacts to 1771-IBN Input module	.52 Amps
		Total maximum current required	1.23 Amps

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Push button Board

The push button assembly used is Bulletin 800A with 24 VDC six chip LED cluster lamps which have longer life than incandescent lamps. The LED cluster is polarity sensitive and will be positioned with the plus (+) indicator facing left when viewing the front of the module. It is **NOT** acceptable to interchange LED and incandescent lamps in the Bulletin 800A assembly. Interchanging lamps could result in intermittent connections, since the lamp bases have slightly different dimensions and mating contacts will set over time. The contacts will be operating at 24 VDC.

I/O Modules

A sinking input module is used to interface with the Bulletin 800A contacts. Each contact will typically draw 8 mA when energized. Connection from the input module to the pushbutton contacts is through one of the cables described in Table 2 on the next page.

A sourcing output module is used to interface to the 800A push button assembly lamps (LED's). Each LED will typically require 18 mA when illuminated. Connection from the output module to the LED's is through one of the cables described in Table 2 on the next page.

Interconnecting Cables

Two preassembled cables connect the push button assembly and I/O modules: one cable will connect to the input module and one to the output module. All connections to Bulletin 800A contacts and LED's are sent through these cables. See Table 2 on the next page.

For SLC systems, each end of the cable for the 32 point RediPANEL has a 40 pin connector which mates with a 40 pin receptacle on the RediPANEL. The other end of the cable has a 40 pin connector which mates with a 40 pin receptacle on the Bulletin 1746 module. One end of the cable on the 16 point version has a 20 pin connector which mates with a 20 pin receptacle on the Bulletin 800A panel assembly and the other end has an 18 position prewired swing arm which mates with a Bulletin 1746 module.

For PLC systems each end of the cable for the 32 point RediPANEL has a 40 pin connector which mates with a 40 pin receptacle on the RediPANEL. The other end of the cable has a 40 point prewired swing arm which mates with the Bulletin 1771 module. One end of the cable on the 16 point version has a 20 pin connector which mates with a 20 pin receptacle on the RediPANEL and the other end has a 21 point prewired swing arm which mates with a Bulletin 1771 module.

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The input and output cable connectors are identified on the printed circuit board. It is important that the input and output module connectors are connected correctly, since the output modules do not have reverse polarity protection. Connecting the wrong cable and module could result in a short to the power supply output terminals or a blown module fuse. Some of these fuses are not field replaceable.

Table 2
Module and Cable Catalog Numbers

No. of Push buttons	PC type	Module Type	Module Catalog No.	Cable Catalog No. based on cable length		
				1.0 Meter	2.5 Meters	5.0 Meters
16	SLC	Input	1746-IB16	1492-CABLE10B	1492-CABLE25B	1492-CABLE50B
		Output	1746-OB16	1492-CABLE10E	1492-CABLE25E	1492-CABLE50E
	PLC	Input	1771-IBD	1492-CABLE10F	1492-CABLE25F	1492-CABLE50F
		Output	1771-OBD			
32	SLC	Input	1746-IB32	1492-CABLE10H	1492-CABLE25H	1492-CABLE50H
		Output	1746-OB32			
	PLC	Input	1771-IBN	1492-CABLE10J	1492-CABLE25J	1492-CABLE50J
		Output	1771-OBN	1492-CABLE10L	1492-CABLE25L	1492-CABLE50L

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Faceplate Configurations

Figures 3 and 4 show the push button locations and bit addresses for 16 and 32 point SLC's and PLC's.

Figure 3
Faceplate configurations for 16 point SLC's and PLC's

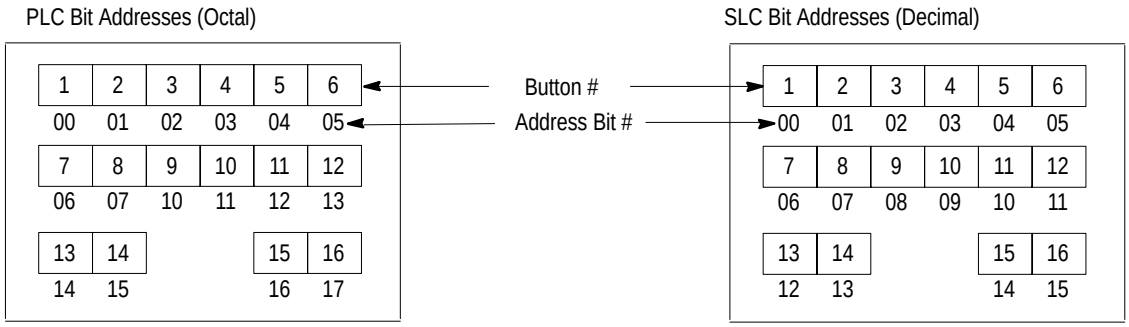
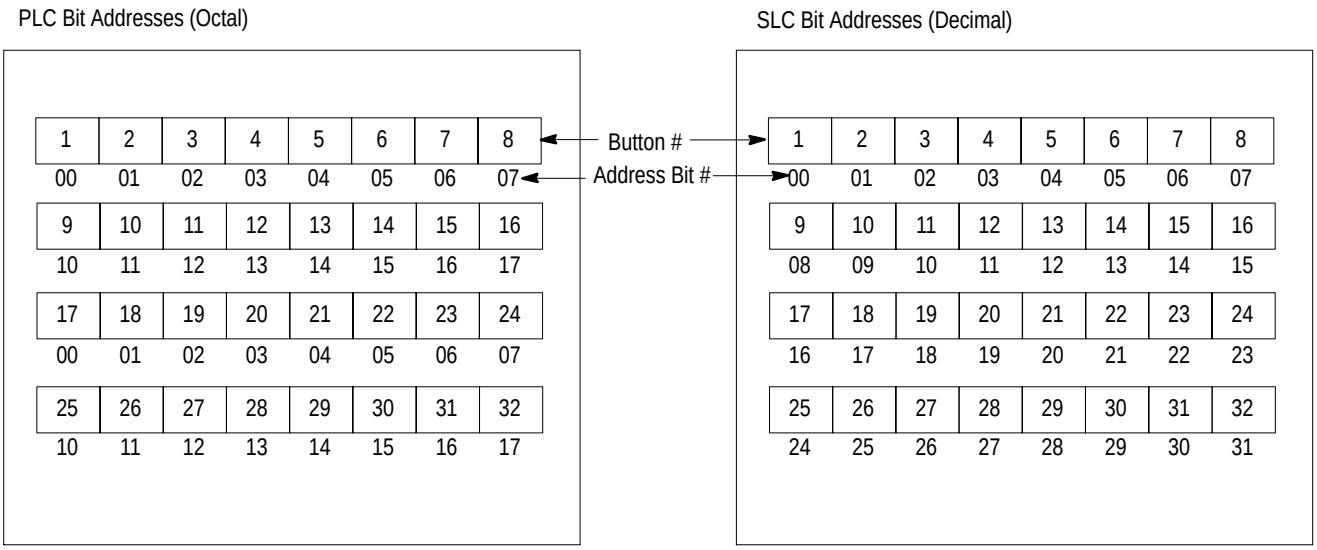


Figure 4
Faceplate configurations for 32 point SLC's and PLC's



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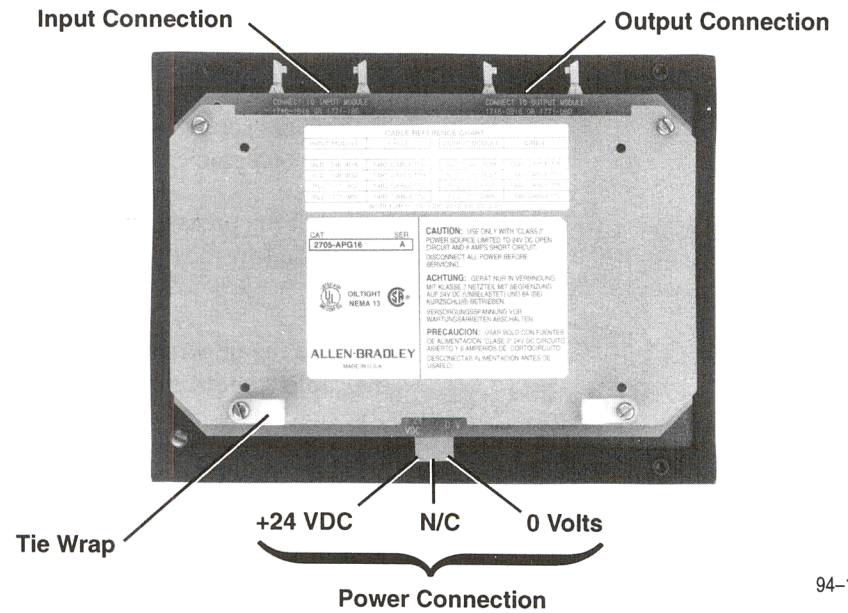
Cable Connections and Clamps

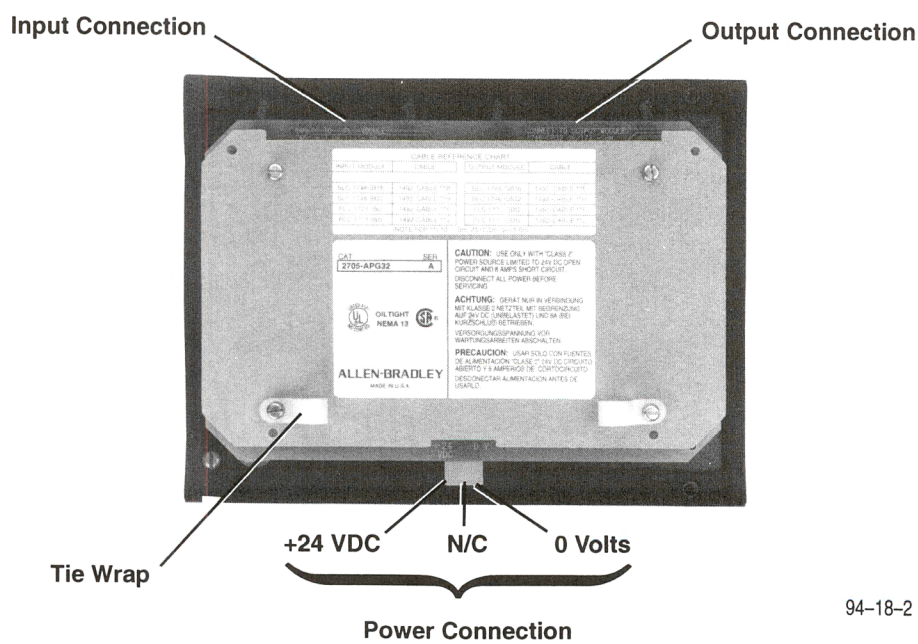
Figures 5 and 6 are rear views of 16 and 32 point push button modules showing the location of connections and tie wraps.

Figure 5
Rear view of Push button Module – 16 points



94–18–1

Figure 6
Rear view of Push button Module – 32 points



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To connect wires to the power connection from the power source, follow these easy steps (see Figures 5 and 6):

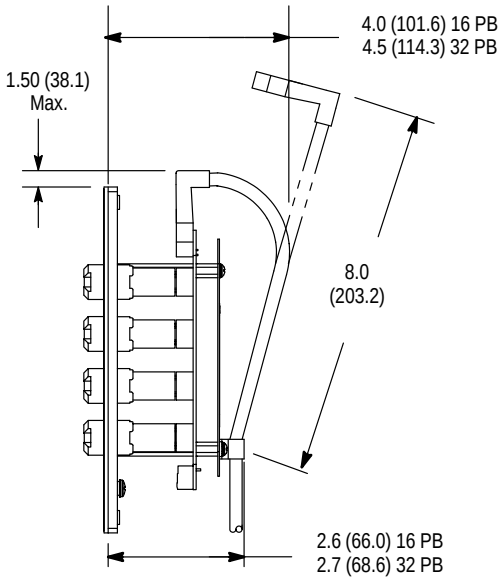
1. Remove the power connector from the receptacle.
2. Loosen left and right screws on the power connector and insert the wires into the openings on the bottom of the power connector, being certain that the correct polarity is observed between the power connection and the power source.
3. Tighten the screws on the power connector and insert the power connector into the receptacle.

To connect the preassembled cables between the RediPANEL and I/O modules, follow these easy steps:

1. Remove the tie wrap from the back of the RediPANEL and place it over the cable at a distance of 8″ from the end.
2. Insert the proper cable (see Table 2) into the appropriate connection terminal (input or output) and secure with locking tabs.
3. **Be certain that the distance from the end of the cable to the tie wrap is 8″,** then reinstall the tie wrap to the back of the RediPANEL. See Figure 7 below.

Figure 7
Side view of Push button Module

Dimensions in inches (millimeters)



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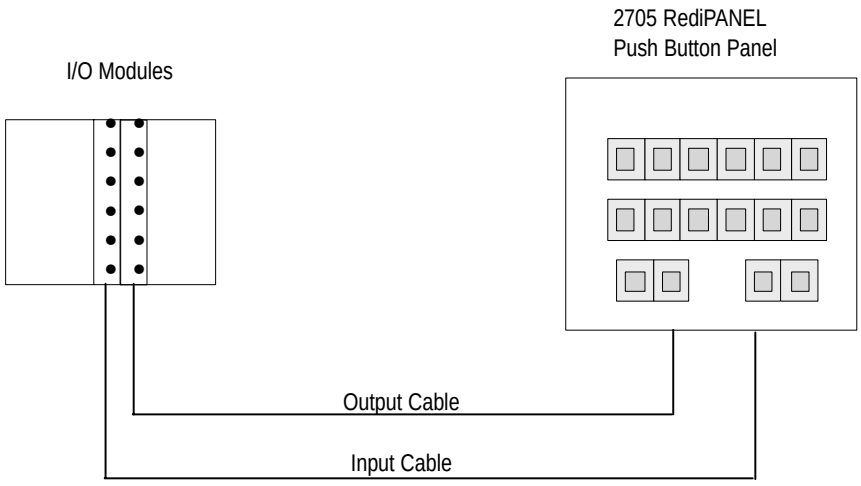
RediPANEL Operation

Connections

RediPANEL modules connect to Allen-Bradley 1746 or 1771 I/O modules with two preassembled cables. This replaces large wire bundles used in hardwired implementation. See Figure 8.

Figure 8
Typical RediPANEL I/O Module connection



Bulletin 800A devices in the RediPANEL module “appear” to the programmable controller as though they were hardwired to I/O modules in an I/O rack. No special instructions are required since the push button, lamp, and switch selection are programmed as discrete I/O devices using the input and output image tables of the programmable controller.

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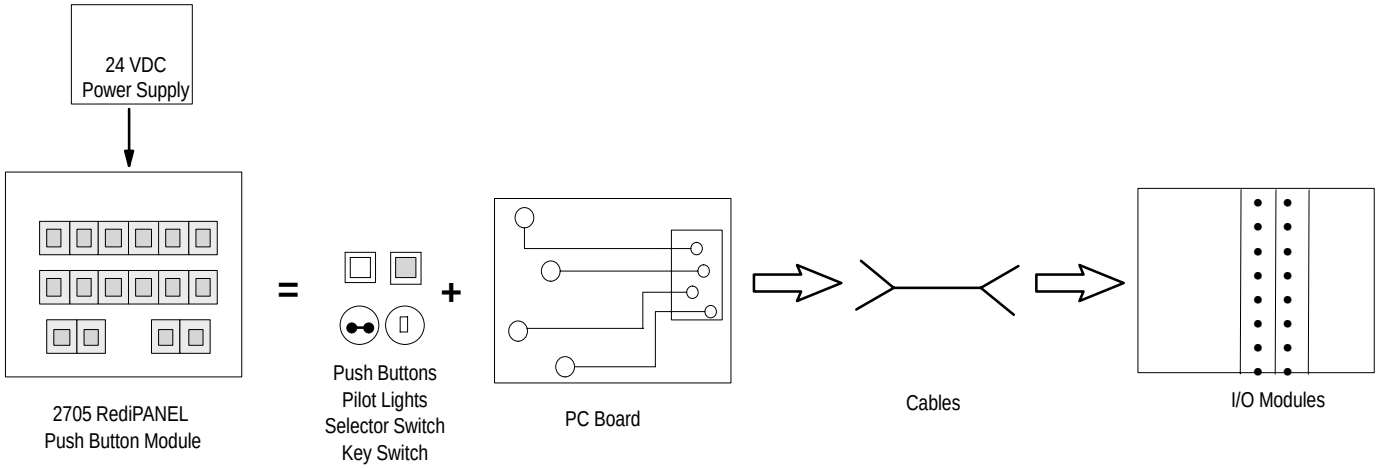
Modules

RediPANEL modules combine the functions of standard push button devices with the capabilities of a remote I/O rack – all in one package. See Figure 9.

Figure 9
Typical RediPANEL Functionality



RediPANEL modules communicate directly with the programmable controller via cables to I/O modules. Programming the devices in the modules is identical to programming devices hardwired to I/O racks. This means that the RediPANEL modules are mapped directly into the I/O image tables of the programmable controller through the I/O modules.

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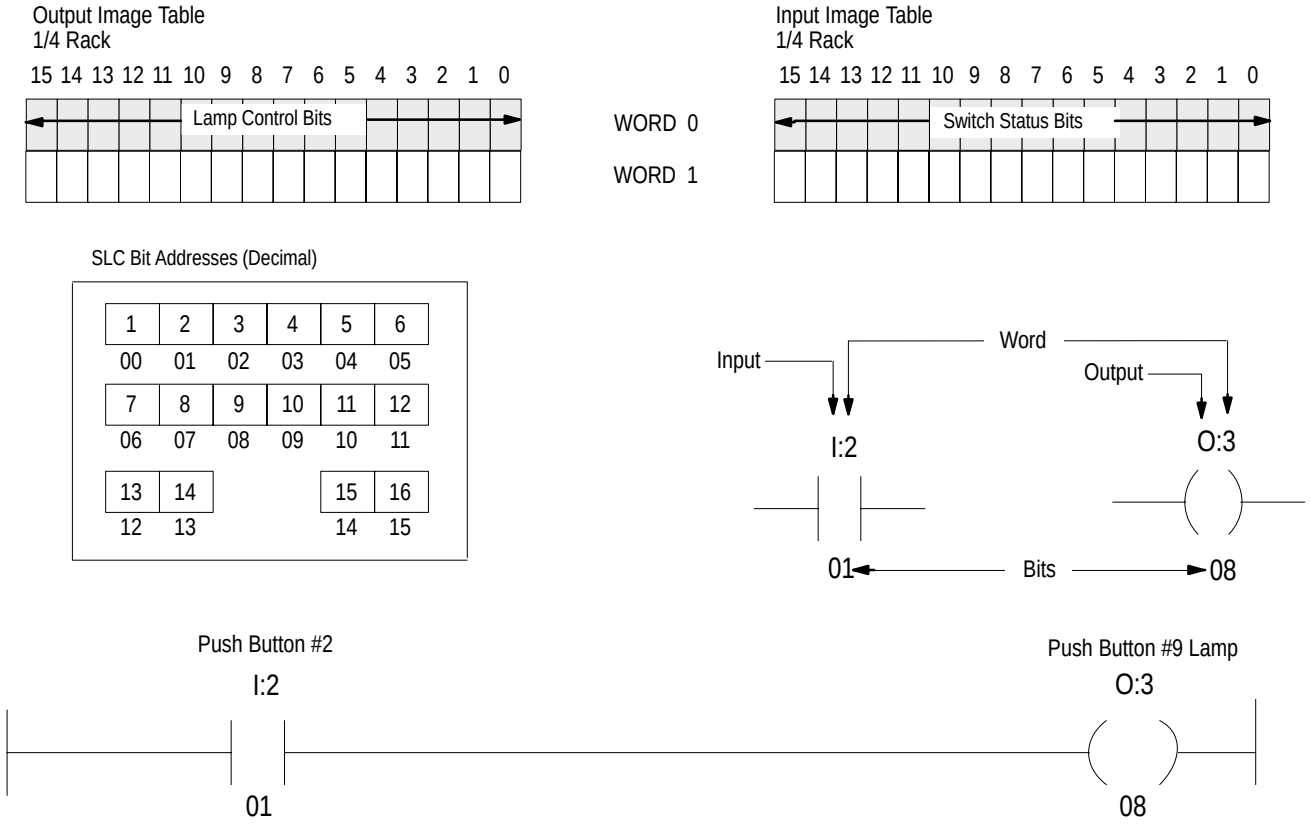
Image Diagrams

Image Table Configurations

Figures 10-13 show a typical I/O image table configuration when using a 16 or 32 button RediPANEL module with a 1746 SLC or a 1771 PLC I/O module.

Figure 10
Typical Image Table Configuration for 16 Button RediPANEL with 1746 SLC I/O Modules



NOTE: This example has push button #2 (at input module word 2 bit 01) turning on lamp #9 (at output module word 3 bit 08).

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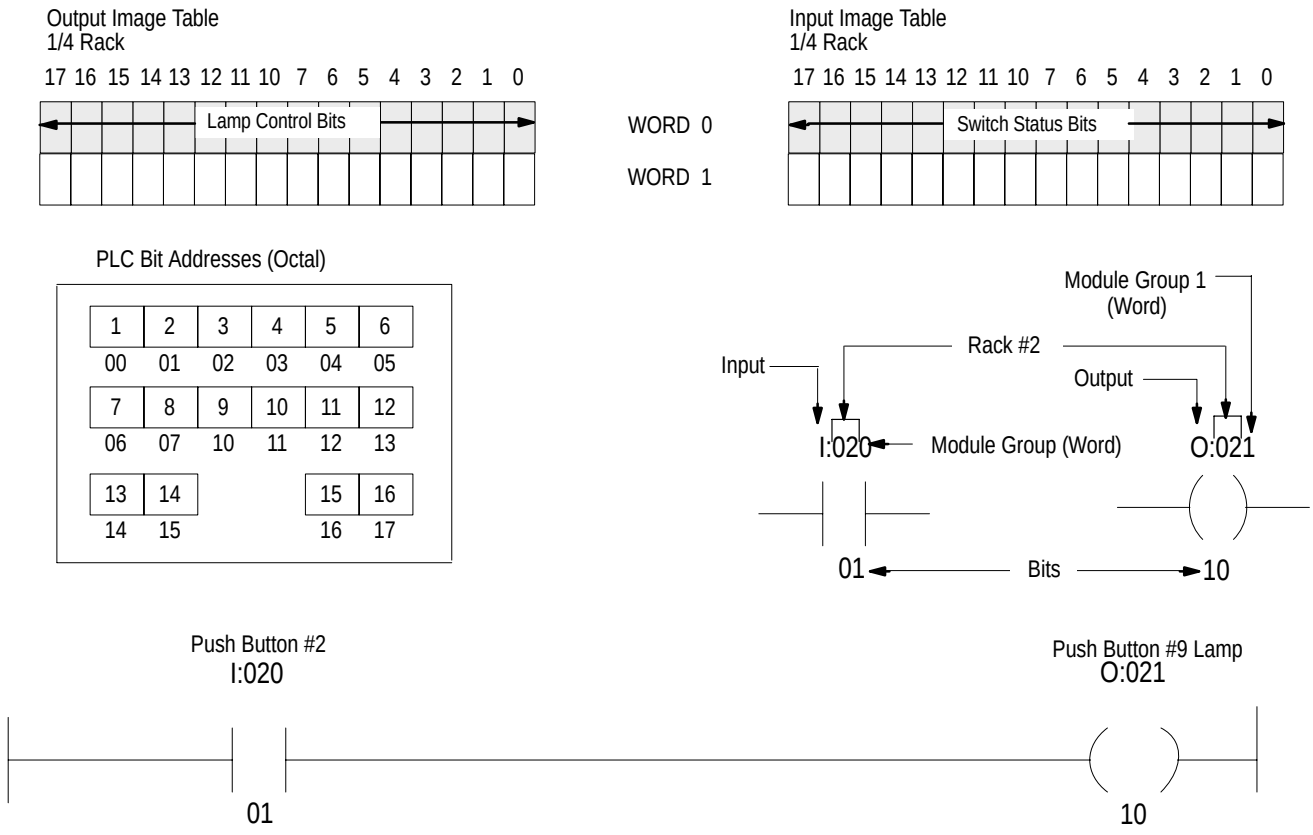
Figure 11
Typical Image Table Configuration for 16 Button RediPANEL with 1771 PLC I/O Modules



NOTE: This example has push button #2 (at rack 2, word 0, bit 01) turning on lamp #9 (at rack 2, word 1, bit 10).
This example assumes one slot addressing for I/O chassis.

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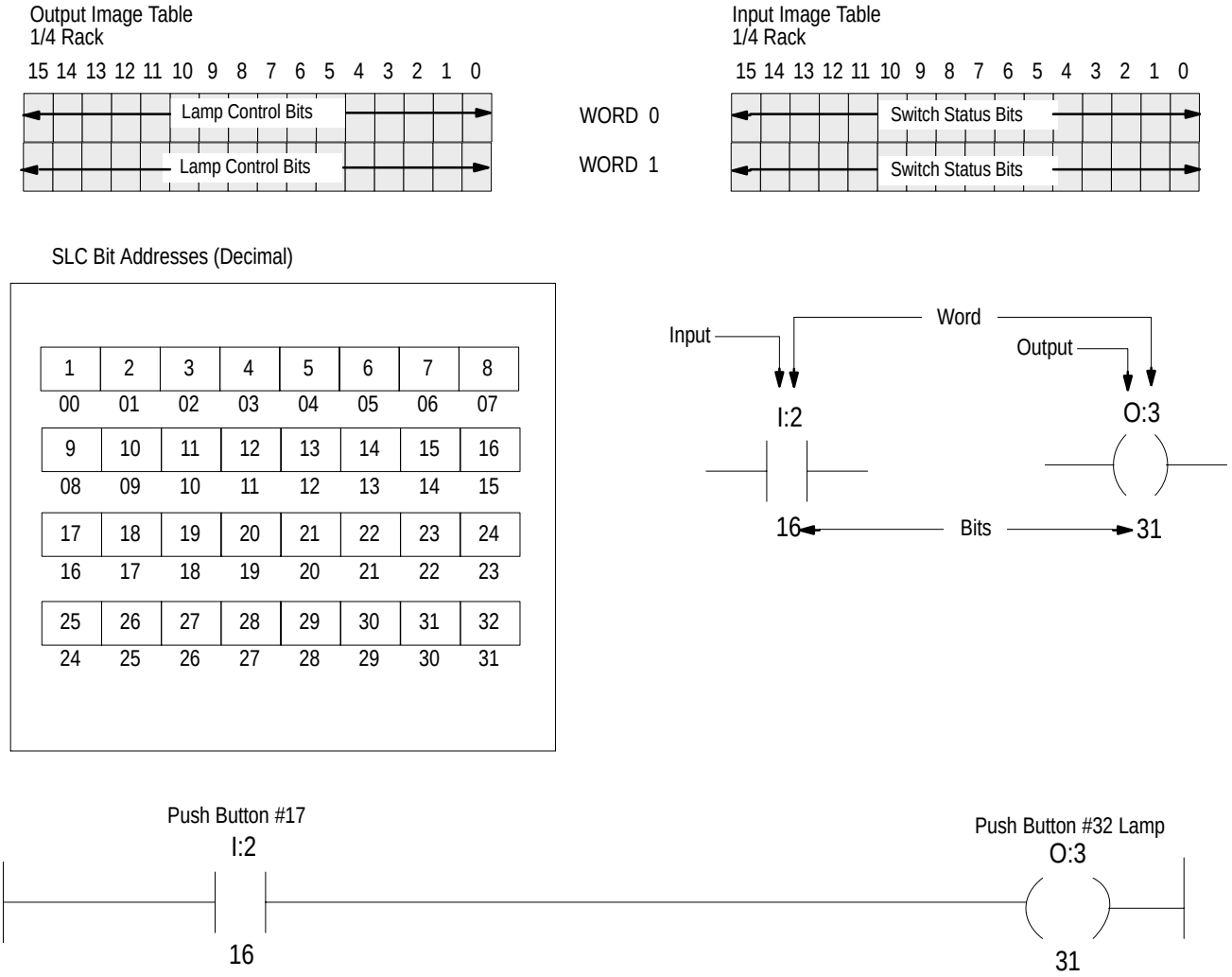
Figure 12
Typical Image Table Configuration for 32 Button RediPANEL with 1746 SLC I/O Modules



NOTE: This example has push button #17 (at input module word 2, bit 16) turning on lamp #32 (at output module word 3 bit 31).

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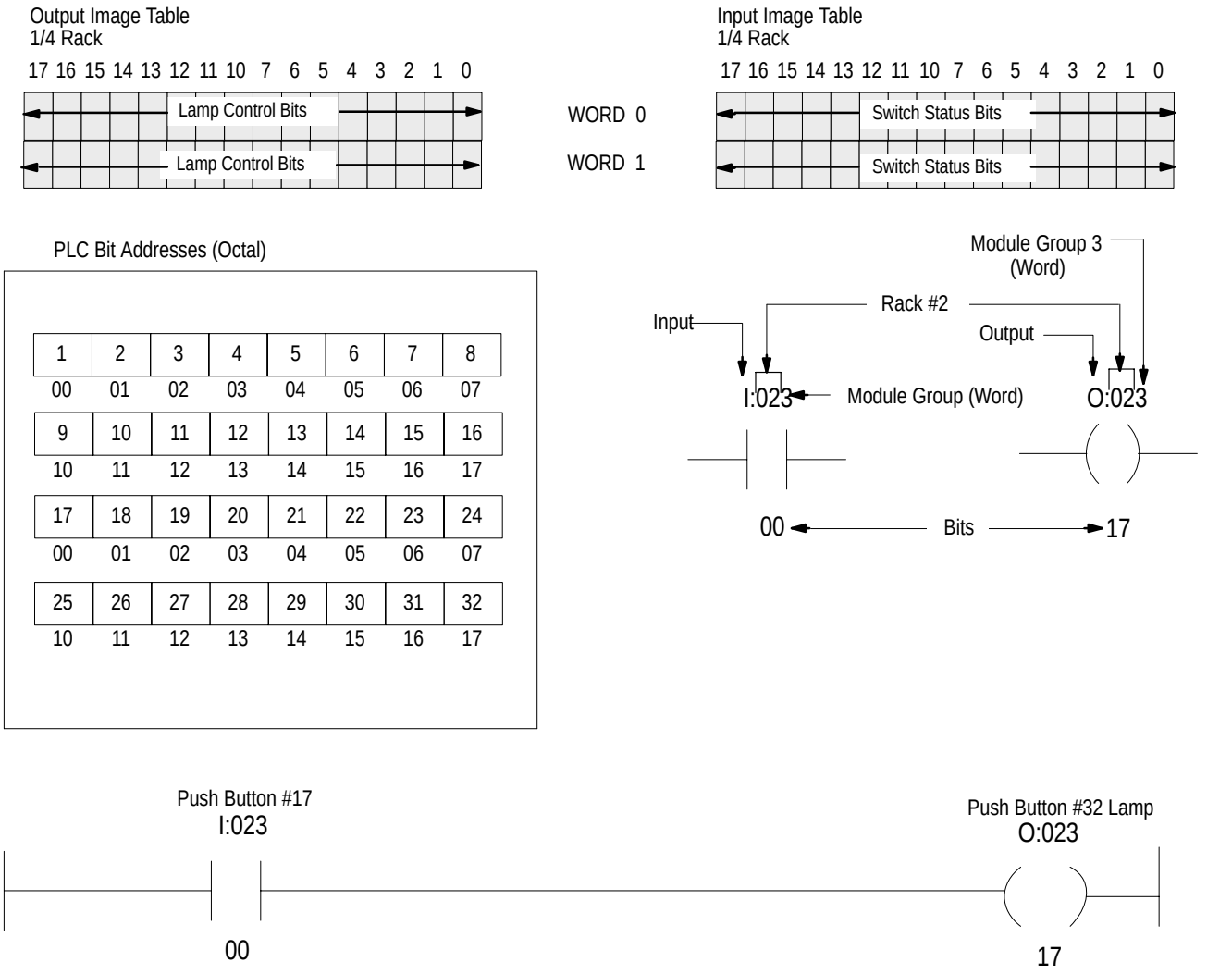
Figure 13
Typical Image Table Configuration for 32 Button RediPANEL with 1771 PLC I/O Modules


Output Image Table
1/4 Rack
17 16 15 14 13 12 11 10 7 6 5 4 3 2 1 0
Lamp Control Bits
Lamp Control Bits
WORD 0
WORD 1
Input Image Table
1/4 Rack
17 16 15 14 13 12 11 10 7 6 5 4 3 2 1 0
Switch Status Bits
Switch Status Bits
PLC Bit Addresses (Octal)
1 2 3 4 5 6 7 8
00 01 02 03 04 05 06 07
9 10 11 12 13 14 15 16
10 11 12 13 14 15 16 17
17 18 19 20 21 22 23 24
00 01 02 03 04 05 06 07
25 26 27 28 29 30 31 32
10 11 12 13 14 15 16 17
Module Group 3
(Word)
Rack #2
Input
Output
I:023
Module Group (Word)
O:023
00
Bits
17
Push Button #17
I:023
00
Push Button #32 Lamp
O:023
17

NOTE: This example has push button #17 (at rack 2, word 3, bit 00) turning on lamp #32 (at rack 2, word 3, bit 17).
This example assumes one slot addressing for I/O chassis.

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Modification and Replacement Procedures

Custom 800A RediPANEL Modules

If the standard configuration modules with momentary push buttons do not meet your requirements, 800A custom modules are available. Custom modules can contain any combination of the following Bulletin 800A devices:

Momentary Illuminated Push Buttons
Maintained Illuminated Push Buttons
Two Position Selector Switches
Flush Head or Extended Head Operators
Two Position Key Switches

Installing or Replacing Push Button Legends

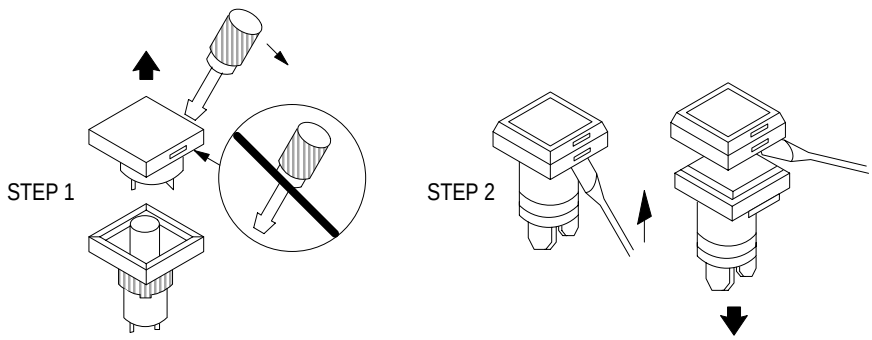
ATTENTION: To avoid electrical shock or unintended operation of the equipment, disconnect power before servicing.

1. Remove the lens carrier from the push button on the module by gently prying it out on either side of the carrier with a screwdriver.

ATTENTION: DO NOT use the slot on either side of the lens carrier for prying as it may break the assembly.

2. Remove the color lens by placing a small screwdriver into the slot on the back of the lens carrier and gently prying the two pieces apart.

ATTENTION: DO NOT use too much pressure in prying the assembly apart as it can damage the colored lens.



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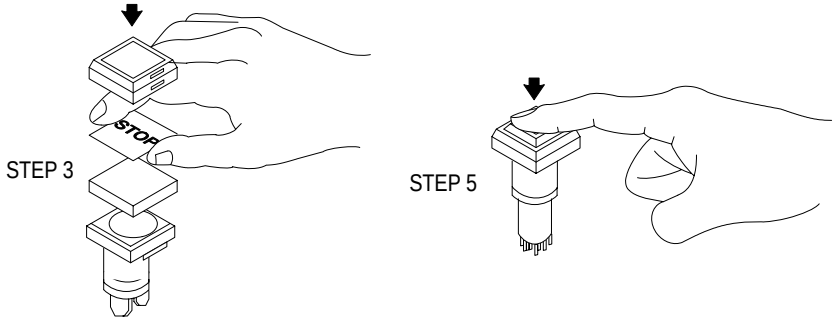
Installing or Replacing Push Button Legends (cont'd)

3. Insert the new legend and "snap" the two pieces back together.
4. Replace the keyed lens carrier into the push button.
5. Check for proper operation of the push button.



Lamp Replacement

ATTENTION: To avoid electrical shock or unintended operation of the equipment, disconnect power before servicing.

1. Remove the lens carrier from the push button on the module by gently prying it out on either side of the carrier with a screwdriver.

ATTENTION: DO NOT use the slot on either side of the lens carrier for prying as it may break the assembly.

2. Remove existing lamp from socket.

ATTENTION: DO NOT use the screwdriver or any other metal object to remove the bulb. Use ONLY the 800M-N5 lamp replacement tool.

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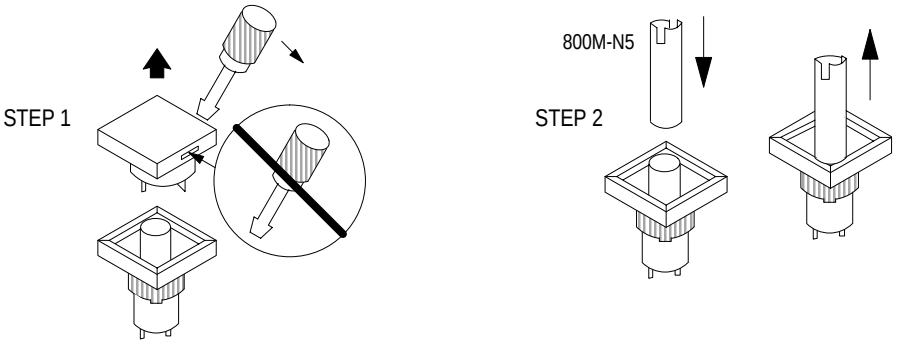
Lamp Replacement (cont'd)



3. Carefully insert the new lamp into the socket.

ATTENTION: Before replacing the lens carrier into the push button, **be sure** the lamp is seated properly or a short may result. The LED must be installed with plus (+) indicator facing to the left.

4. Replace the keyed lens carrier into the push button.
5. Check for proper operation of the push button.

Specifications

Electrical

External Power Supply	24 Volts DC ± 10 % 21.6-26.4 VDC
Input Current and Power Ratings (All On)	32 Buttons 16 Buttons SLC .95 Amps .47 Amps PLC 1.23 Amps .55 Amps
LEDs	24 VDC six chip cluster lamps Catalog No. 800T-N62R (red) -N62G (green) -N62A (amber)
Power Connector	Two position header (part of printed circuit board assembly) and two position removable connector (provided). End user responsible for wiring between connector and external power supply.
UL File/Guide	Non-Hazardous Locations: E56639/NMTR
CSA	Non-Hazardous Locations: LR62923

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Mechanical

Enclosure	NEMA Type 13
Configurations	32 Push Button Module Standard: 8 Red, 16 Green, 8 Amber 16 Push Button Module Standard: 8 Red, 8 Green
Replacement Illuminated Push Button	16 PB Units – 800A-C2DG24 (Green) 800A-C2DR24 (Red) 32 PB Units – 800A-C2CA24 (Amber) 800A-C2CG24 (Green) 800A-C2CR24 (Red)
Approximate Dimensions	Length: 9.5″ (241.3mm) Height: 7.25″ (184.15mm) Depth: 4.0″ (101.6 mm - 16 Button Panel) 4.5″ (114.3 mm - 32 Button Panel)
Approximate Weight of Module (w/o Cables)	2.9 lbs. (1.3 kg) 16 Button Panel 3.25 lbs. (1.5 kg.) 32 Button Panel

Enviornmental

Temperature	Operating: -20°C to +45°C (-4°F to 113°F) (Operating temperature at 0°C (32°F) is based on the absence of freezing moisture or liquid.) Storage: -30°C to +85°C (-22°F to 185°F)
Humidity	5% – 95% non-condensing

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